

What is claimed is:

- 5.3 A<sub>1</sub> }
1. A camera assembly of a printing press comprising:
    - a housing;
    - an image sensor positioned within said housing and adapted to acquire images of a moving substrate of a printing press;
    - a light source positioned within said housing;
    - an optics assembly positioned within said housing;
    - a microprocessor positioned within said housing; and
    - image processing hardware positioned within said housing and adapted to analyze the acquired images of the substrate.
  2. The camera assembly of claim 1 wherein said image sensor is a CCD scanner.
  3. The camera assembly of claim 1 wherein said image sensor is an area scanner.
  4. The camera assembly of claim 1 wherein said light source is a strobe type light.
  5. The camera assembly of claim 1 wherein said optics assembly include a lens.
  6. The camera assembly of claim 5 wherein said optics assembly includes at least one mirror.
  7. The camera assembly of claim 1 wherein said image processing hardware includes at least one FPGA.
  8. The camera assembly of claim 1 and further including a power supply.

9. The camera assembly of claim 1 and further including a communication interface.

5 10. A camera assembly for use in scanning a paper substrate of a printing press, acquiring an image and processing the image, said assembly comprising:  
a housing;  
a camera positioned within said housing; and  
image processing hardware positioned within said housing and including at least one FPGA.

10 11. A camera assembly for use in scanning a paper substrate of a printing press, acquiring an image and processing the image, said assembly comprising:  
a housing;  
a camera positioned within said housing;  
15 a light source positioned within said housing;  
a microprocessor; and  
image processing hardware positioned within said housing.

20 12. A camera assembly for use in scanning a paper substrate of a printing press, acquiring an image and processing the image, said assembly comprising:  
a housing;  
a scanner positioned within said housing;  
a light source positioned within said housing;  
image processing hardware positioned within said housing and  
25 including an FPGA; and  
a digital communication interface positioned within said housing.

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13. A camera assembly for use in scanning a paper substrate of a printing press, acquiring an image and processing the image, said assembly comprising:  
a housing;  
a CCD area scanner positioned within said housing;  
a strobe light source positioned within said housing;  
a microprocessor within said housing; and  
image processing hardware positioned within said housing, wherein said image processing hardware includes at least one FPGA.

14. A camera assembly for use in scanning a paper substrate of a printing press and determining color register error, said assembly comprising:  
a housing;  
a camera positioned within said housing for acquiring images of the substrate;  
a light source positioned within said housing;  
an optics assembly positioned within said housing; and  
image processing hardware positioned within said housing for processing the acquired images and determining any color register error.

15. A camera assembly for use in scanning a paper substrate of a printing press, acquiring an image and processing the image, said assembly comprising:  
a housing;  
a scanner positioned within said housing; and  
image processing components positioned within said housing wherein said components includes a microprocessor and an FPGA.

16. A method of determining color register error on a printing press, said method comprising:

5 providing a camera assembly having mounted therein a scanner and image processing hardware for acquiring an image of a paper substrate of a printing press;

processing the image with the image processing hardware to determine any color register error; and

10 transferring the color register error information externally of the camera assembly.

17. A method of determining color register error of a printing press, said method comprising:

15 scanning a paper substrate at a desired location with a camera assembly having mounted, within a housing, a scanner and image processing hardware to obtain an image;

processing the image with the image processing hardware to determine a color register error; and

20 transferring the error information externally of the camera assembly to effect color registration of the printing press.

18. A camera assembly for use in scanning a paper substrate of a printing press, obtaining an image, and processing the image all within the assembly, the printing press having a sideframe and the paper substrate have an extremity, said assembly comprising:

25 a housing dimensioned so that said housing is mountable at the extremity of the paper substrate without interference from the sideframe of the printing press;

a camera positioned within said housing;

a light source positioned within said housing;

30 an optics assembly positioned within said housing; and

image processing hardware positioned within said housing.

19. The camera assembly of claim 18 wherein said housing has a width dimension of no more than four inches.

5 20. The camera assembly of claim 18 wherein said housing includes at least one rib to dissipate heat.

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